Abstract Title: Finger protector for hairdressing

A finger protector comprises two sheath portions (2, 3) for the middle and index fingers of a user's hand, the sheath portions (2, 3) comprising a mesh, said hand guard further comprising a flexible polymeric web (6) substantially surrounding, and connected to, the edges of the sheath portions which in use will be adjacent to the main part of the hand. The hand guard is particularly suitable for use when cutting hair as the mesh minimizes the risk of the scissors cutting the fingers and the web minimizes the risk of the scissors cutting the hand near the fingers, both on the palm and back of the hand.
Figure 1
HAND GUARD

The invention relates to a hand guard adapted to protect at least two adjacent fingers on a user's hand and which is especially applicable for use by hairdressers when cutting hair.

According to one aspect of the present invention a hand guard comprises at least two sheath portions for two adjacent fingers of a user's hand, the sheath portions comprising a mesh, said hand guard further comprising a flexible polymeric web substantially surrounding, and connected to, the edges of the sheath portions which in use will be adjacent to the main part of the hand.

The invention is particularly applicable for use by hairdressers cutting hair since the scissors used have to be sharp and pointed and the hair is cut by feeding it between the index and middle fingers. This can lead to cuts to the fingers, the skin between the fingers, the knuckles and/or the palms adjacent to the fingers. The aim of this invention is to provide a guard which is comfortable to wear, protects at least the fingers, allows hair to slide between the sheathed fingers and does not remove the finger sensitivity required when cutting hair.

Preferably the hand guard is integral (unitary) but the sheath portions are separately formed and not connected directly to each other, in which case they may be interconnected by means of attachment to the flexible polymeric web. Preferably the sheath portions are open so that the tips of the user's fingers extend through the open ends. This allows more air circulation and more importantly allows the user more finger sensitivity than would be the case if the sheath portions were closed at the ends, completely covering the finger tips. When cutting hair, fingertip sensitivity is very important in ensuring a good cut. Where the sheath portions are open-ended, then preferably a flexible polymeric collar is connected to the end of each. This flexible polymeric collar usually extends completely around the edge of the respective sheath portion and is conveniently of the same material as that of the web. Preferably each sheath portion (including a collar, if present) extends as a continuous construction around each finger with no longitudinal split. Preferably each sheath portion would be as a continuous seamless cylinder, but manufacturing constrictions may necessitate a
longitudinal seam, in which case they may be achieved by use of a longitudinal strip of a flexible polymer e.g. of the same material as the polymeric web. Where a sheath has a longitudinal join, this is preferably not next to the adjacent sheath portion, otherwise in use it would be between the fingers and this would not only be uncomfortable but would inhibit hair cutting, as hair would not easily slide between the sheath portions.

In a preferred embodiment, the hand guard is assembled using suitable tooling whereby the two mesh sheath portions are positioned so that a free end of each is sandwiched by a fused form of the polymer and the fused polymer is shaped so that it forms a continuous web around and between the two sheath portions. The polymer is then solidified, thus bonding to the mesh. In this method there is likely to be some incursion of the polymer into interstices of the mesh at or near the edge of the sheathed portion. Where a flexible polymeric collar is to be provided at the finger tip end of each sheath portion then the tooling can be designed so that the same process can be used i.e. using a fused polymer which is solidified, sandwiching the edge of the sheath portion. Where one or more sheath portions has a join, then this may be achieved by means of a flexible polymer be a similar method as just described. The sheath portions usually consist of a majority of mesh and preferably as much of the sheath portions as possible consist of mesh.

Prior to fitting on a user’s hand, the overall length of the guard may be in the range 30mm to 90mm, more preferably 40mm to 90mm and the diameter of the sheath portions may be in the range 8mm to 25mm, more preferably 12mm to 30mm. Preferably the sheath portions reach far enough along the fingers to cover the top (distal inter-phalangeal) joint of each finger, but leaving the finger tip free. In an alternative embodiment the sheath portions are of a length such that when positioned on a hand they reach between the first (proximal inter-phalangeal) joint and the top (distal inter-phalangeal) joint. In a further embodiment the sheath portions are of different lengths so that the longer sheath may be positioned on the middle finger and the shorter on the index finger, as the latter is usually shorter.

The flexible polymer in the web, and the collar when present, may be a thermoplastic or rubber elastomeric material or even a composition of the two. From an aesthetic point of view it may be preferable for the polymer to be coloured. Different sizes of
hand guards could be in different colours for ease of identification. Preferably the thickness of the polymer is in the range 0.5 mm to 3mm, more preferably in the range 1mm to 2mm. The web preferably extends over the knuckles and/or the palm part of the hand adjacent the sheathed fingers. This helps to hold the guard on the hand and protects those parts of the hand next to the index and middle fingers.

By a ‘mesh’ is meant a network defining spaces through which air can pass. The mesh may be formed by any method resulting in a flexible product e.g. by knitting, stitching, braiding, weaving or matting wires/filaments together. The diameter (thickness) of the individual wires/filaments may be in the range 0.01 mm to 0.25mm. Examples of suitable materials are

(1) one or more synthetic or natural polymeric materials e.g. polyamide (e.g. nylon) or polyesters, preferably as monofilament; one polymer may be coated by another, or

(2) one or more metals such as stainless steel, copper, nickel or alloys containing any of these metals; one metal may be coated by another.

The wires/filaments may be straight or crimped prior to being formed into the mesh and the mesh is preferably substantially uniform throughout. Preferably the surface of the mesh has a sufficiently low coefficient of friction that not only will hair slide over it but also scissors will too, so reducing the risk of scissors cutting through the mesh. The thickness of each sheath portion may be in the range 0.25 mm to 1mm; too thin and it will not be sufficiently cut-resistant, too thick and it will be uncomfortable for the user and/or not sufficiently flexible. Preferably the mesh is formed so that it is coherent, will remain in one piece and will not fall apart when in use. Flexibility of the mesh is needed to allow the fingers to move in relation to each other in as many directions as possible. In one embodiment a stretch mesh may be used, the advantage being that one size of hand guard may be used on a variety of sized fingers/hands. Preferably each sheath portion tapers in cross-section towards the free end, thus generally following the reducing cross-sectional size of the human finger. The cross-sections of sheath portions on the same hand guard may be made different to each other to accommodate different finger cross-sections. For example, the index finger is
often larger in cross-section than the middle finger, so the sheath portions could be sized accordingly.

Preferably the hand guard is fully washable and resistant to chemicals used in hairdressing, in which case the selection of materials would be made with that aim in mind. Preferably the hand guard can be used on either hand and is sized to be a close fit on the hand so that no additional means such as a strap is needed to hold it on the hand during use.

It will be appreciated that certain features of the invention, which are, for clarity, described in the context of separate embodiments, may also be provided in combination in a single embodiment. Conversely, various features of the invention which are, for brevity, described in the context of a single embodiment, may also be provided separately or in any suitable combination. Although the invention has been described in the context of hairdressing and therefore in relation to protection of the index and middle fingers, there may be other applications in which the fingers to be protected may be other than the index and middle or even where every finger and thumb needs to be protected.

Two embodiments of the present invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a back view of a hand guard according to one embodiment of the present invention fitted onto a hand;
Figure 2 is a front view of the hand guard in Figure 1;
Figure 3 is a perspective view of the hand guard in Figures 1 and 2;
Figure 4 is a back view of a hand guard according to a second (preferred) embodiment of the present invention before being fitted on to a hand; and
Figure 5 is a side view of the hand guard in Figure 4.

Referring to Figures 1 to 3, the hand guard (1) comprises two sheath portions (2,3) each consisting of a knitted stainless steel mesh sleeve. At the finger tip end, each
sheath portion (2,3) is connected to a flexible elastomeric collar (4,5) extending continuously around it. The sheath portions (2,3) are not directly connected to each other but are connected together by means of a flexible elastomeric web (6) extending between the fingers and completely around the ends of the sheath portions (2,3). In Figure 1 it can be seen that the web (6) extends partially over the knuckle area, thereby protecting that area from cuts. Similarly, it can be seen in Figure 2 that the web (6) extends over that part of the palm immediately adjacent to the fingers thereby protecting that area from cuts.

Referring to Figures 4 and 5, the hand guard (7) comprises two sheath portions (8a, 8b) wherein the sheath portion 8a is shorter than 8b, but the sheath portion 8a is slightly bigger in cross-section than 8b. Each sheath portion (8a, 8b) consists of a non-stretchable, woven nylon mesh in a diamond pattern -see insert (8ab). The mesh pattern is the same throughout the sheath portions (8a, 8b) but is not shown as such for reasons of clarity. The cross-section of sheath portions (8a, 8b) gradually reduces towards the respective free end (9a, 9b), thus generally following the contour of the finger. Each free end (9a, 9b) is connected to a flexible elastomeric collar (10a, 10b) extending continuously around it. Each sheath portion (8a, 8b) has a longitudinal seam (11a, 11b) on the outside edge. The mesh is joined by means of a longitudinal flexible elastomeric strip (12a, 12b) of the same material as the collar (10a, 10b). The sheath portions (8a, 8b) are joined by means of a flexible elastomeric web 13 of the same elastomeric material as the collars (10a, 10b) and the strips (12a, 12b). When the hand guard (7) is fitted on the hand the free ends (9a, 9b) of the sheath portions (8a, 8b) reach to just around the distal inter-phalangeal joint, thus leaving the fingertip (distal phalanx) free.

In use the flexibility of the mesh and the polymeric web and collar allows easy movement of the hand when cutting hair. The close fit keeps the guard on the hand during use and the vulnerable regions of the hand are protected from cuts. Because the mesh allows ventilation the guard should not make the hand hot and uncomfortable when worn. The materials allow the guard to be washed and the guard can fit both left and right hands. The mesh allows hair to slide between the sheathed fingers, as required when cutting hair. In particular the nylon mesh shown in Figures 4 and 5 is thin but strong and allows easy slide of hair and scissors while protecting the fingers and adjacent palm and knuckle portions.
CLAIMS:

1. A hand guard comprises at least two sheath portions for two adjacent fingers of a user's hand, the sheath portions comprising a mesh, said hand guard further comprising a flexible polymeric web substantially surrounding, and connected to, the edges of the sheath portions which in use will be adjacent to the main part of the hand.

2. A hand guard according to claim 1 which consists of two sheath portions.

3. A hand guard according to claim 1 or 2 in which the sheath portions comprise a majority of mesh.

4. A hand guard according to any preceding claim in which the mesh has a sufficiently low coefficient of friction so that in use hair will slide over it.

5. A hand guard according to any preceding claim wherein the hand guard is integral (unitary).

6. A hand guard according to any preceding claim wherein the sheath portions are separately formed and not connected direct to each other.

7. A hand guard according to claim 6 wherein the sheath portions are connected by means of the flexible polymeric web.

8. A hand guard according to any preceding claim wherein the sheath portions are open so that in use the fingers would extend through the open ends.

9. A hand guard according to claim 8 wherein a flexible polymeric collar as connected to each open end.

10. A hand guard according to any preceding claim wherein each sheath portion extends as a continuous construction laterally so that in use there is no longitudinal split.

11. A hand guard according to any preceding claim wherein each sheath portion comprises a continuous longitudinally seamless cylinder.

12. A hand guard according to any of claims 1 to 10 wherein the sheath portions each has a longitudinal seam.

13. A hand guard according to claim 12 wherein the longitudinal seam comprises a strip of a flexible polymeric material.

14. A hand guard according to claim 12 or 13 wherein the longitudinal seam is not next to the adjacent sheath portion.
15. A hand guard according to any preceding claim wherein the surfaces of the sheath portions which in use will be next to each other each consist of substantially seam-free mesh.

16. A hand guard according to any preceding claim wherein the overall length is in the range 40 to 90mm.

17. A hand guard according to any preceding claim wherein the overall length is in the range 30 to 90mm.

18. A hand guard according to any preceding claim wherein the overall length is such that in use the sheath portions extend cover the top (distal interphalangeal) joint of the finger but leave the finger tip free.

19. A hand guard according to any preceding claim wherein the flexible polymeric web is continuous around and between the sheath portions.

20. A hand guard according to any preceding claim wherein the flexible polymeric web is sized so that in use it extends over at least part of the knuckles and at least part of the hand.

21. A hand guard according to any preceding claim wherein the mesh comprises a polyamide.

22. A hand guard according to any preceding claim wherein the thickness of the mesh is in the range 0.25mm and 1mm.

23. A hand guard according to any preceding claim wherein each sheath portion tapers towards, what would be in use, the end of the finger.

24. A hand guard according to any preceding claim wherein in use it is a close fit on the hand.

25. A hand guard according to any preceding claim wherein no additional means is required to hold the guard onto a hand during use.

26. A hand guard according to claim 1 and substantially as herein described with reference to any one of Figures 1 to 5.

27. A hand guard according to claim 1 and substantially as herein described.

28. A hand guard according to any preceding claim suitable for use on a hand during the process of cutting hair.

29. A hand guard according to any preceding claim when used on a hand during the process of cutting hair.
**Patents Act 1977: Search Report under Section 17**

**Documents considered to be relevant:**

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**Field of Search:**

Search of GB, JP, WO & US patent documents classified in the following areas of the UKC

A3V

Worldwide search of patent documents classified in the following areas of the IPC

A41D; A45D

The following online and other databases have been used in the preparation of this search report

EPODOC & WPI

**International Classification:**

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